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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,775	03/14/2005	Adrianus Van Bezooijen	NL 020886	1786

24737 7590 10/10/2006

PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
P.O. BOX 3001  
BRIARCLIFF MANOR, NY 10510

EXAMINER

CHAN, RICHARD

ART UNIT PAPER NUMBER

2618

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/527,775	Applicant(s) VAN BEZOOIJEN ET AL.	
	Examiner Richard Chan	Art Unit 2618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/14/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 recites the limitation "the base-band controller" in line 5 of claim 9.

There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 8, 12-16, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen (US 6,980,780).

With respect to claim 1 and 12, Chen discloses the method and circuit for preserving linearity of a RF power amplifier, the power amplifier Fig.2 element 10 (Col.2 lines 45-49) including a RF power output unit having a characteristic drive level and fed by a supply voltage, comprising: measuring the output voltage of the RF power output unit with power detectors 41 and 43; (Col.2 lines 54-57) comparing the measured output voltage through matching circuits 32 and 33 to at least one threshold voltage (Col.3 lines 27-31) to produce a control signal thru attenuation circuit 56; and adapting the

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drive level or the supply voltage of the RF power output unit by means of the control signal to operate the output unit below its saturation level of the power controller 11, (Col.3 lines 7-17)

With respect to claims 2 and 13, Chen discloses the method and circuit of claim 1 and 12, wherein the power amplifier includes a variable gain preamplifier 21 supplying the drive voltage to the RF power output unit and wherein the control signal from bias control circuit 51 is used to adapt the gain of the preamplifier 21 through signal VAPC1 (Col. 2 lines 59-65)

With respect to claims 3 and 14, Chen discloses the method and circuit of claims 2 and 12, wherein the control signal VAPC1 is combined with the gain control signal of the preamplifier 21. (Col.2 lines 61- Col.3 lines 1)

With respect to claim 4, Chen discloses the method for controlling an antenna circuit Fig.2 comprising a RF power amplifier 21 and a matching circuit 31, 32, 33, and 34 by preserving linearity of a RF power amplifier 21, the power amplifier 21 comprising a RF power output unit having a characteristic drive level (Col.2 lines 45-49) and fed by a supply voltage source, comprising: measuring the output voltage with power detectors 41 and 43 of the RF power output unit; comparing the measured output voltage to at least one threshold voltage (Col.3 lines 27-31) to produce a control signal through bias control signal circuit 51; and adapting the output matching circuit 32, 33, and 34 by

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means of the control signal through bias controls signal circuit 51 to operate the output unit below its saturation level. (Col.3 lines 7-17)

With respect to claim 5, Chen discloses the method of claim 4, wherein the adapting of the output matching circuit 32, 33, and 34 is done by changing either the magnitude or the phase of the impedance transform function through the detection signal DS1 and DS3 which changes the magnitude of the transform signal. (Col.2 lines 54-61)

With respect to claims 8 and 18, Chen discloses the method of claim 1 and 12, wherein the output voltage of the RF power output unit Fig.2 is compared to the threshold voltage (Col.3 lines 27-31) by means of an operational amplifier 52. (Col.2 lines 62-65)

With respect to claim 15, Chen discloses the circuit for stabilizing an antenna circuit comprising a RF power amplifier Fig.2 element 10 (Col.2 lines 45-49) and a matching circuit 32 and 33, wherein the RF power amplifier 21 comprises a RF power output unit having a characteristic drive level (Col.3 lines 7-17), comprising a measuring unit 41 and 43; (Col.2 lines 54-57) measuring the output voltage of the RF power output unit; a comparing unit 55 comparing the measured output voltage of the RF power output unit to a threshold voltage (Col.3 lines 27-31) to produce a control signal; a drive level adaptation unit adapting the output matching circuit by means of the control signal

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thereby adapting the drive level of the RF power output unit to operate the RF output unit below its saturation level for preserving linearity of the RF power amplifier. (Col.3 lines 7-17)

With respect to claim 16, Chen discloses the circuit of claim 15, wherein the output matching circuit 32, 33, and 34 is configured to be adaptable with respect to either the magnitude or the phase of its impedance transform function through the detection signal DS1 and DS3 which changes the magnitude of the transform signal. (Col.2 lines 54-61)

With respect to claim 20, Chen discloses an apparatus, Fig.2 comprising a circuit as claimed in claim 12.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen US(6,980,780) in view of Ichikawa (US 6,532,357).

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With respect to claim 6, Chen discloses the method of claim 4, wherein the adapting of the output matching circuit 32, 33, and 34, however the Chen reference does not disclose the adapting of the supply voltage are combined with a power amplifier efficiency optimization in case of a multiple threshold detection by an analog-to-digital converter.

The Ichikawa reference however discloses wherein a analog to digital converter 15 is used to transmit digital signals regarding the values detected by power detection unit 24, and transmitting control signals back to the baseband processor 16, which in turn controls the amplifier 19 based on the threshold value. (Col.7 lines 8-24)

It would have been obvious to one of ordinary skill in the art to implement the analog to digital converter as disclosed by Ichikawa with the method of preserving linearity as disclosed by Chen in order to operate in the baseband environment and converting analog power detection signals to digital and process the information using a baseband processor.

6. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 6,980,780) in view of Tsuji (US 6,725,027).

With respect to claims 7 and 17, Chen discloses the method of claim 1 and 12, however Chen does not specifically disclose wherein the output voltage of the RF power output unit is rectified before being compared to the threshold voltage.

The Tsuji reference however discloses wherein the input signal must be rectified before being processed the receiver system. Claim 1

It would have been obvious to one of ordinary skill in the art to implement a rectifier as disclosed by Tsuji with the linearity system as disclosed by Chen in order to obtain rectified power signals with the system to process.

7. Claims 9, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen US(6,980,780) in view of Nishihori (US 6,164,424).

With respect to claims 9 and 19, Chen discloses the method of claim 8 and 18, wherein the output voltage of the RF power output unit is compared in at least two parallel operational amplifiers 52, 53, and 54 to threshold voltages VAPC 1, VAPC2, and VAPC3 to produce at least two control signals, however Chen does not disclose wherein the at least two control signals are fed to the base-band controller .

The Nishihori reference however discloses wherein a baseband processor 15 wherein control signals are being sent into to process RF signals converter to IF.

It would have been obvious to one of ordinary skill in the art to implement the Baseband processor as disclosed by Nishihori with the method of preserving linearity as disclosed by Chen in order to further process the RF signals received in the Chen reference and process it further in baseband environment.



With respect to claim 10, Chen and Nishihori combined disclose the method of claim 9, however Chen discloses wherein the at least two threshold voltages VAPC1 to VAP3 have different voltage levels. (Col. 2 lines 62-67)

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 6,980,780) in view of Kurokawa (US 6,678,507).

With respect to claim 11, Chen discloses the method of claim 1, however Chen does not specifically disclose wherein the supply voltage is adapted by a programmable DC-DC converter controlled by a base-band controller which is fed by the control signal.

The Kurokawa reference however discloses wherein a DC-DC converter to generate from a positive power supply a negative voltage for use as the negative power supply (Col.1 lines 54-65) and wherein a baseband processor BBU is used to control the preamplifier of the receiver circuit. (Col.10 lines 42-52)

It would have been obvious to one of ordinary skill in the art to implement the DC-DC converter and baseband processor as disclosed by Kurokawa with the linearity system as disclosed by Chen in order to obtain a regulated power signal.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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The Vilhonen reference (US 2004/0176052) discloses a method and apparatus providing reduction in transmitter current consumption using signal derived from rectified input signal.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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09/27/06



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